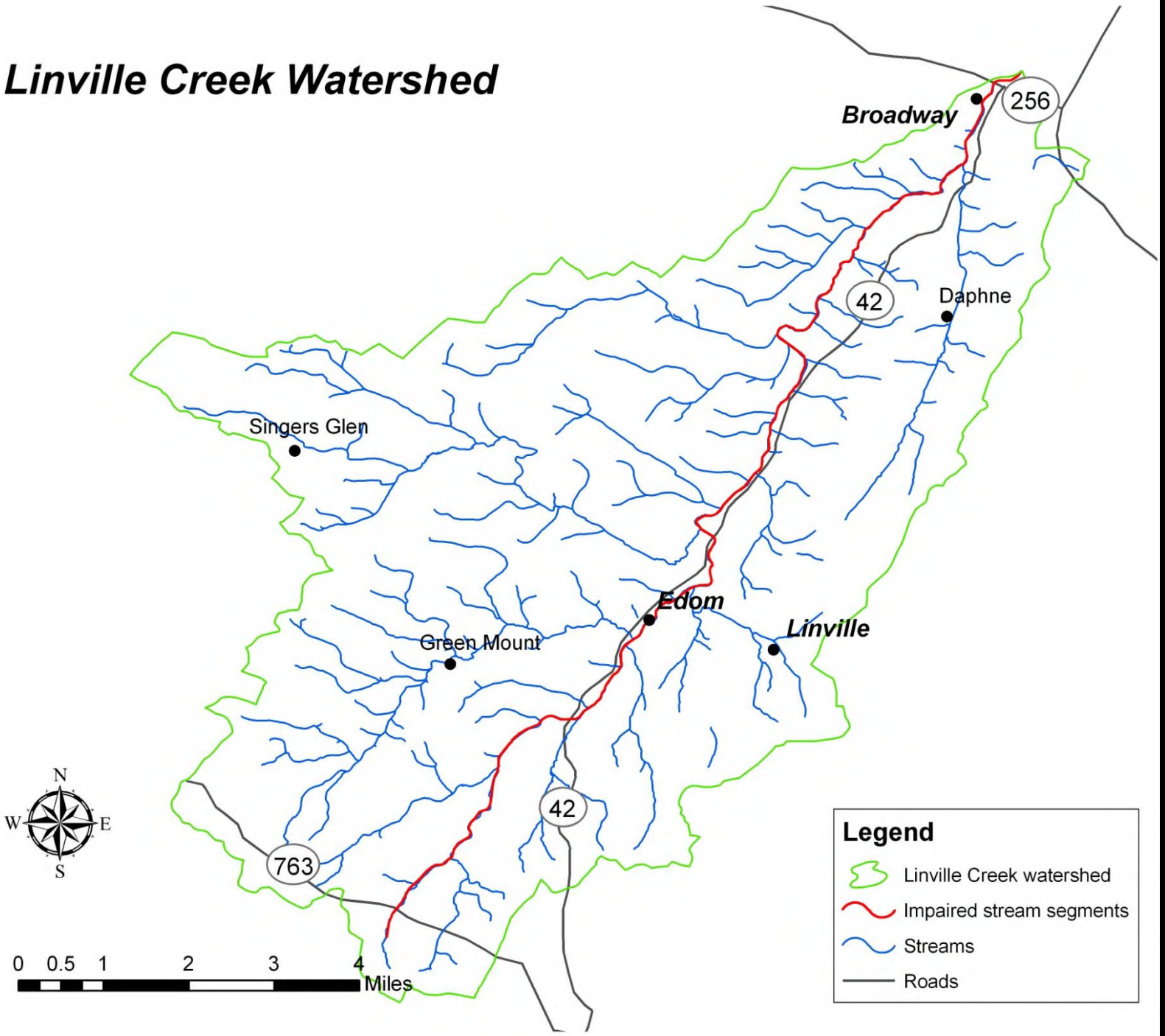
CLEARING THE WATER:

A Plan for a Clean and Healthy Linville Creek

Nesha McRae
Department of Environmental Quality

Acknowledgements

- Linville Creek Watershed Landowners
- Linville Edom Ruritan Hall
- Shenandoah Valley Soil and Water Conservation District
- Natural Resource Conservation Service
- Town of Broadway
- Rockingham County
- VA Rural Water Association
- Department of Environmental Quality
- Department of Health

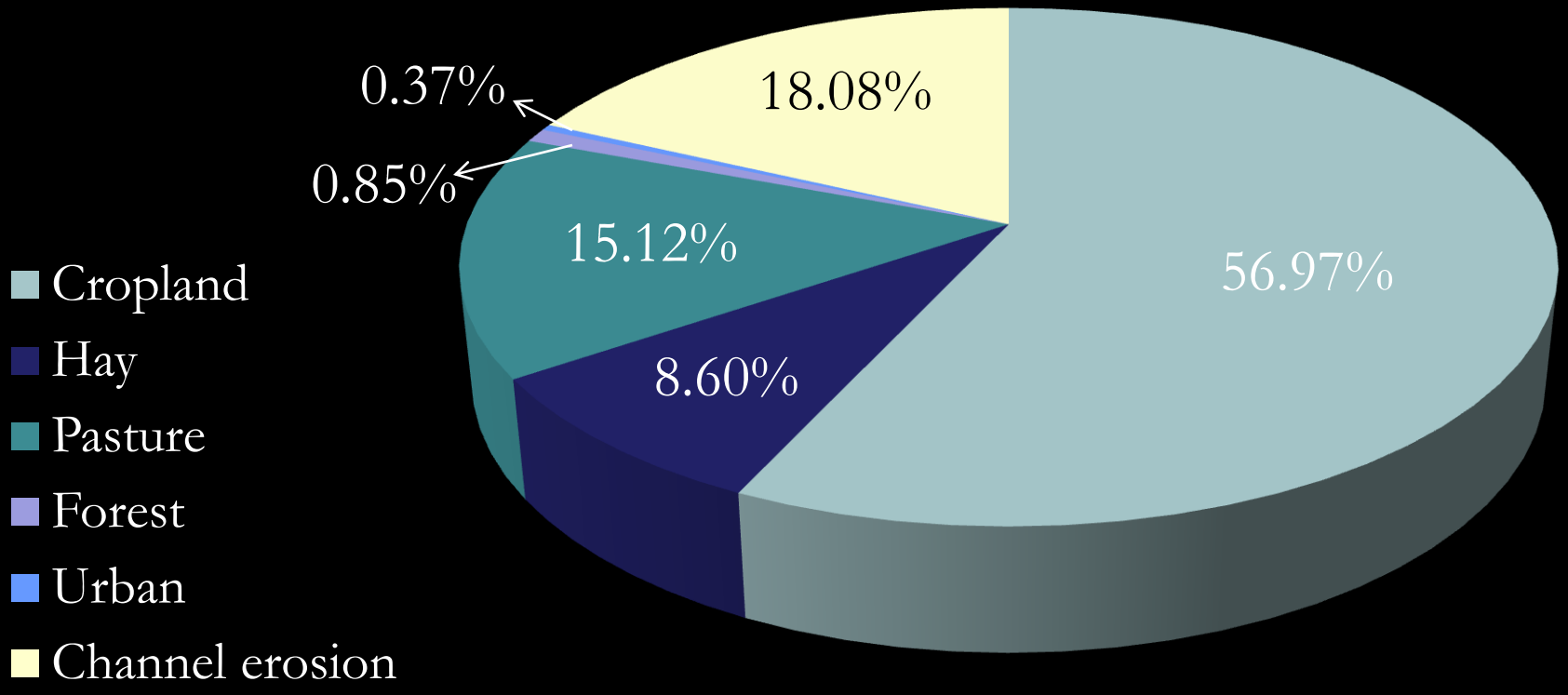

Linville Creek Watershed
Broadway
256
42
Daphne
Singers Glen
Edom
Linville
Green Mount
42
763
N
W
E
S
0 0.5 1 2 3 4
Miles
Legend
Linville Creek watershed
Impaired stream segments
Streams
Roads

Why do we need a plan for clean water?

1. Too much sediment in Linville Creek
   - How do we know this?
   - Why is sediment a problem?
     - Impacts to aquatic life
     - Streambank erosion
     - Soil loss

Where is the sediment coming from?

Sediment Sources in Linville Creek



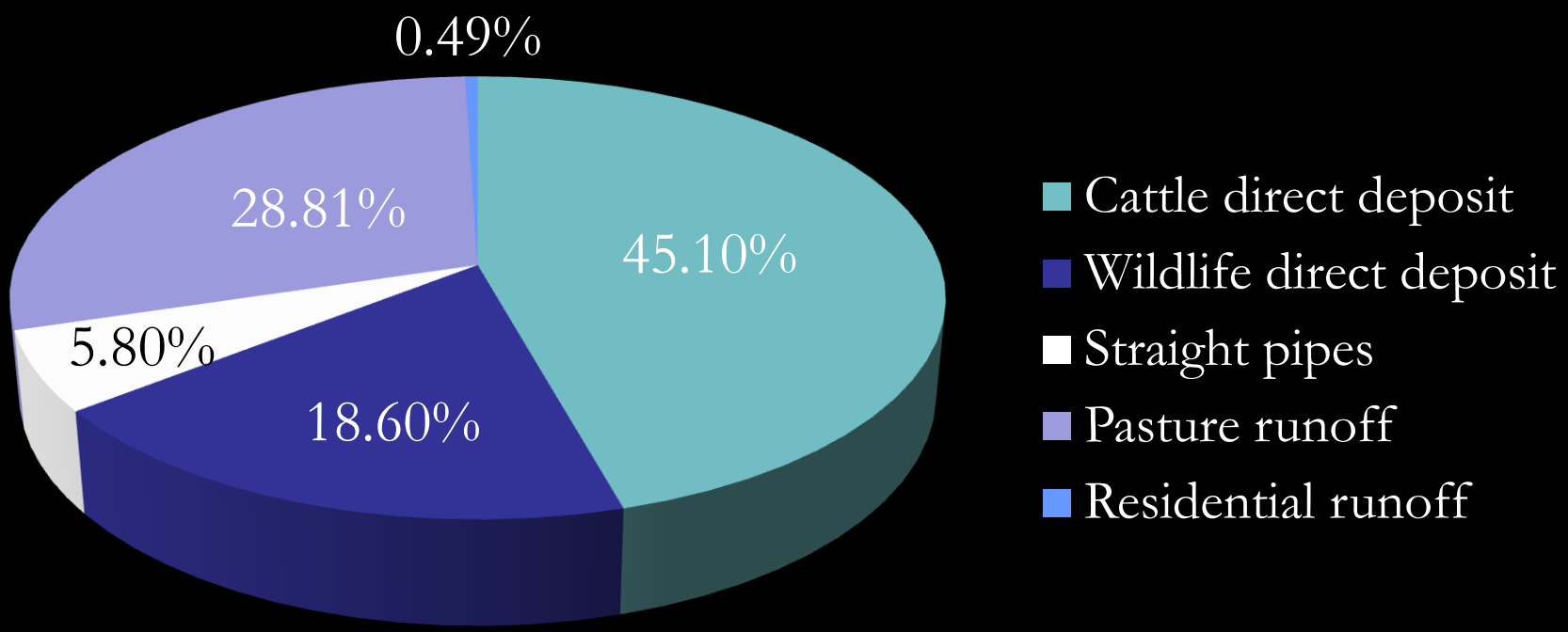
Data from 2003 VA Department of Environmental Quality Linville Creek TMDL Study

Why else do we need a plan for clean water?

2. Too much *E.coli*
   - Human health concern
     - E.coli standard= illness or infection in 8 in 1,000
   - Human sources of greatest concern
   - Impacts on livestock
     - >50% of cattle diseases in mid-Atlantic transmitted through fecal oral pathway

Where is the bacteria coming from?

Bacteria Sources in Linville Creek



Data from 2003 VA Department of Environmental Quality
Linville Creek TMDL Study

Where are we now?

The Planning Process in Linville Creek

- Public meeting to kick off project in November
- Working group and steering committee meetings over the past 9 months
- Draft plan has been completed, kicking of 30-day public comment period starting tomorrow
- Plan available at:
  - DEQ TMDL website: search "DEQ draft TMDL implementation plan"

Developing the Plan

- Importance of local input
- Unique solutions
  - Identifying sites for urban stormwater best management practices
  - Working with schools in the watershed
  - Neighborhood pet waste stations
  - Development of targeted outreach initiative for failing septic systems

What is in the plan?

- Actions to improve water quality (BMPs)
- Outreach strategies
- Costs and benefits
- Funding opportunities
- Project timeline
  - Implementation goals
  - Implementation milestones

Agricultural Best Management Practices: *Pasture*

BMP	Units	Extent
Improved pasture management	Acres	9,150
Loafing lot management system	System	14
Manure storage facility (beef)	Facility	11
Litter storage facility (non-permitted poultry)	Facility	14
Reforestation of erodible pasture	Acres	584
Permanent vegetative cover on critical areas	Acres	584
Sediment retention, erosion or water control structure	Ac treated	100
Livestock exclusion from streams	Miles	50.8

Agricultural Best Management Practices: *Cropland*

BMP	Units	Extent
Continuous no till	Acres	2,407
Cover crops (annual acreage)	Acres	1,584
Cropland buffers: forested	Acres	5
Cropland buffers: grass filter strips	Acres	46
Permanent vegetation on cropland	Acres	188

Failing Septic Systems and Straight Pipes

BMP	Units	Extent
Septic tank pumpout	Pumpout	300
Septic system repair	Systems	131
Septic system replacement	System	67
Alternative waste treatment system	System	131
Connection to public sewer	Connection	7

Urban/Residential Stormwater

BMP	Units	Extent
Raingardens	Gardens	8
Bioretention filters	Filters	5
Riparian buffers	Acres	15
Neighborhood pet waste stations	Stations	4
Residential pet waste composters	Composters	49
Commercial pet waste composters	Composters	5
Pet waste education program	Program	1

Streambank Stabilization

- 3,000 feet of streambank stabilization
  - 2,538 ft in agricultural areas
  - 462 ft in residential areas
- Several flood-prone reaches along mainstem
- Pair with stream fencing in agricultural areas

What about wildlife?

- Reduction in bacteria from wildlife needed to remove stream from impaired waters list
- *Why is this?*
- Plan doesn't address wildlife
  - The stream will still be safer and healthier
  - Could consider "Use Attainability Analysis"

Education and Outreach

- Working with local schools
  - Projects at Broadway High School
  - Student internships (JMU & EMU)
- Farm tours and field days
- Develop and distribute educational materials

How much is it going to cost?

- Agricultural BMPs: $8M
- Residential and urban BMPs: $4M
- Streambank restoration: $450,000
- Technical assistance (2 positions, 14 yrs): $1.4M
- Total estimated cost: $13.85M over 18 years
- Annual cost: $770,000

How are we going to pay for it?

- USDA Programs - CREP/EQIP
- Water Quality Improvement Fund
- National Fish and Wildlife Foundation Grants
- EPA 319 Funds (available through DEQ)
- State Revolving Loan Funds
- State Cost-Share Program and Tax Credits

Photo: Jeff Vanuga, NRCS

How long is it going to take?

- 18 year timeline: 2013-2030
- First 7 years: critical and reasonable goals
  - Livestock exclusion and grazing systems (50%)
  - Cropland BMPs
  - Septic system and straight pipe corrections
  - Residential/urban stormwater BMPs
- Second 7 years: harder to reach goals
  - Improved pasture management
  - Livestock exclusion and grazing systems (50%)
- Last 4 years: even harder to reach goals
  - Sediment control structures on pasture
  - Improved pasture management

Implementing the plan… what's next?

- Agricultural BMP implementation through Shenandoah Valley SWCD and Natural Resource Conservation Service
- Pursue grant opportunities for residential and urban BMP programs
- Pursue partnerships with colleges and high schools for education and outreach

Why should you participate?

- Economic benefits
  - Agricultural producers
  - Homeowners
  - Local economy
- Water quality benefits
  - Environmental
  - Human health

Public Comment Period

- August 22, 2013 – September 20, 2013
- Send written comments to:

  Nesha McRae

  Virginia Department of Environmental Quality

  P.O. Box 3000, Harrisonburg VA 22801

  Email: nesha.mcrae@deq.virginia.gov